Sustaining Today's Force Structure and Building the Future Force

Presented to the Surface Navy Association

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PEO Integrated Warfare Systems
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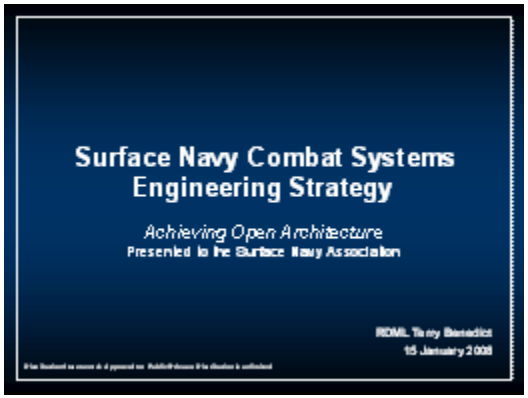
- 2008 Strategy Goals:
  - ☑ – Decouple hardware from software
  - ☑ – Componentize combat systems architecture and common information standards – government owned architecture and interfaces
  - ☑ – Establish a combat system product line approach based on a common objective architecture
  - ☑ – Decouple combat system development from platform development while continuing to accommodate platform specific needs
  - ☑ – Compete where and when appropriate



Looking Ahead to Advanced Capability Build (ACB) 12 and Beyond

- Combat Systems must transition to a network-based COTS Computing Environment to support future warfighting improvements
- System Engineering Guidance has been documented, will be updated based on experience
- We will continue the transition to a network-based COTS Computing Environment as fast as feasible
- Competitions are being conducted when and where appropriate

Increased computing power and network-based performance will enable significant combat system warfighting improvements

Surface Navy Combat System

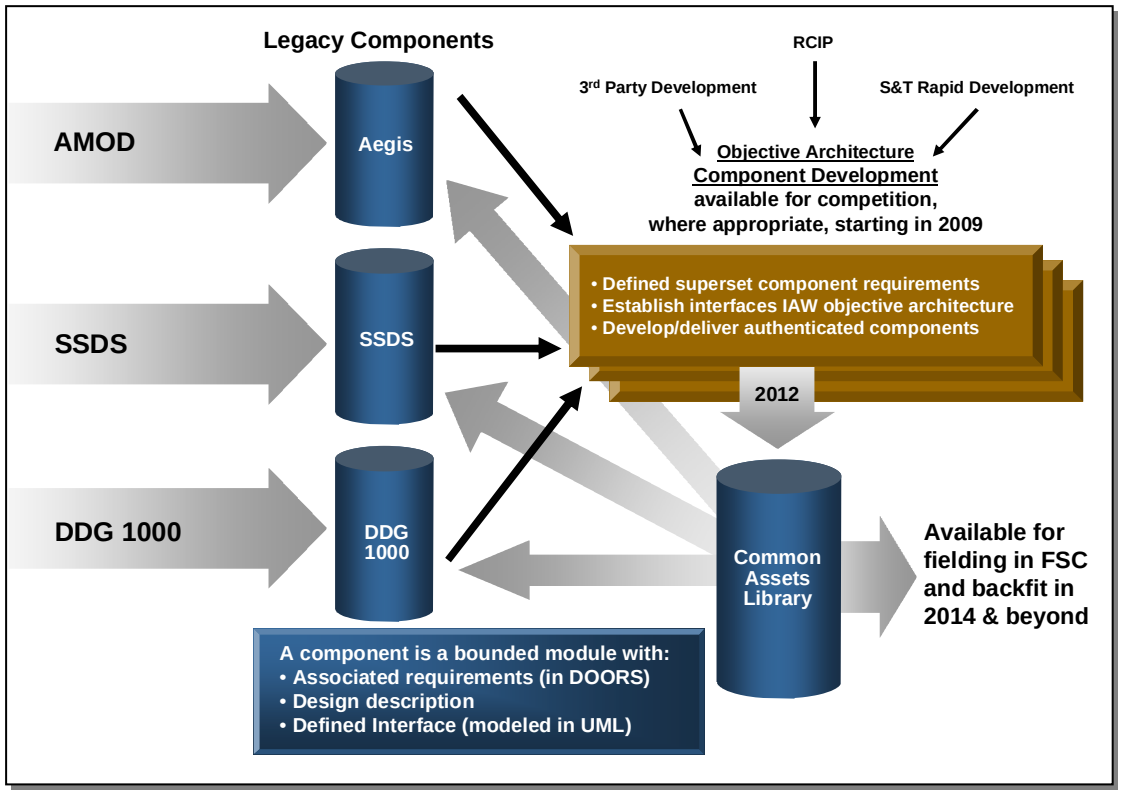
Transition to Objective Architecture On Track

As of November 2009

- Decoupling of Software from Hardware on NIMITZ & BUNKER HILL completed
- NIMITZ final SSDS Software Cert completed June 09
- BUNKER HILL CSSQT successfully completed 30 July 09
- BUNKER HILL Software Cert completed November 09

2012

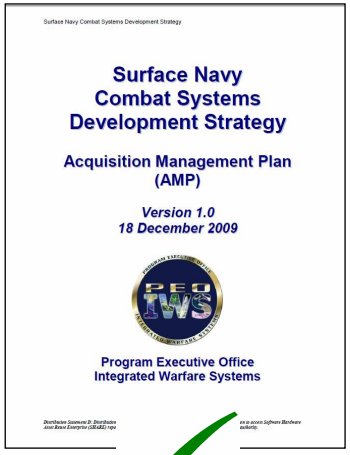
- Aegis modernization (ACB 12) component level interfaces delivered at CDR (1Qtr FY10) and with each delivered computer program build
- SSDS interfaces already documented at component level
- Small number of common components integrated in both Aegis & SSDS-ACB 12

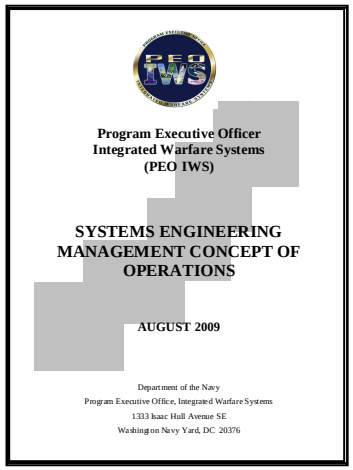


2014 - 2022

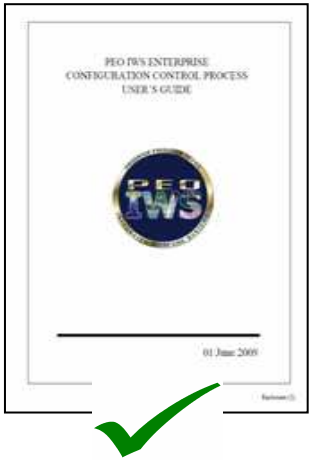
- Number of common components will increase with each ACB eventually moving to a common software core for all Surface Navy Combat Systems
- Required warfighting capabilities will determine which components modified

PEO IWS System Engineering Guidance





January 2010

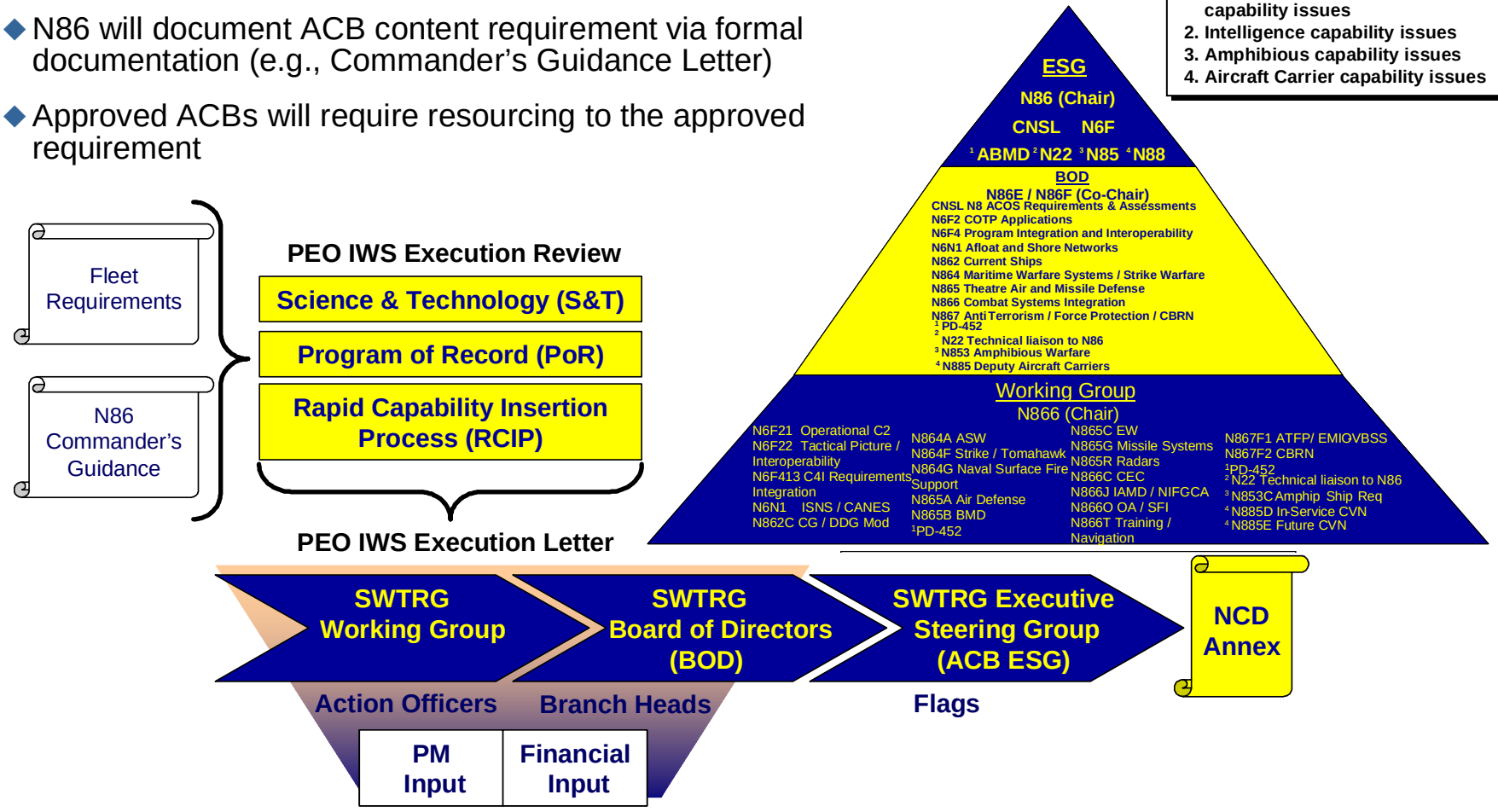


System Engineering Guidance to align PEO IWS' efforts beginning with POM 12

Surface Warfare Tactical Requirements Group (SWTRG)
ACB Content Definition Process

- N86 defined Advanced Capability Build (ACB) content for the Acquisition Community
  - Informal, collaborative approach between Action Officers and PEO IWS SIPMs / MPMs for content definition and alignment
  - SWTRG is formal content definition governance process
- N86 will document ACB content requirement via formal documentation (e.g., Commander's Guidance Letter)
- Approved ACBs will require resourcing to the approved requirement

Required attendance for:
1. **Air and Ballistic Missile Defense capability issues**
2. **Intelligence capability issues**
3. **Amphibious capability issues**
4. **Aircraft Carrier capability issues**



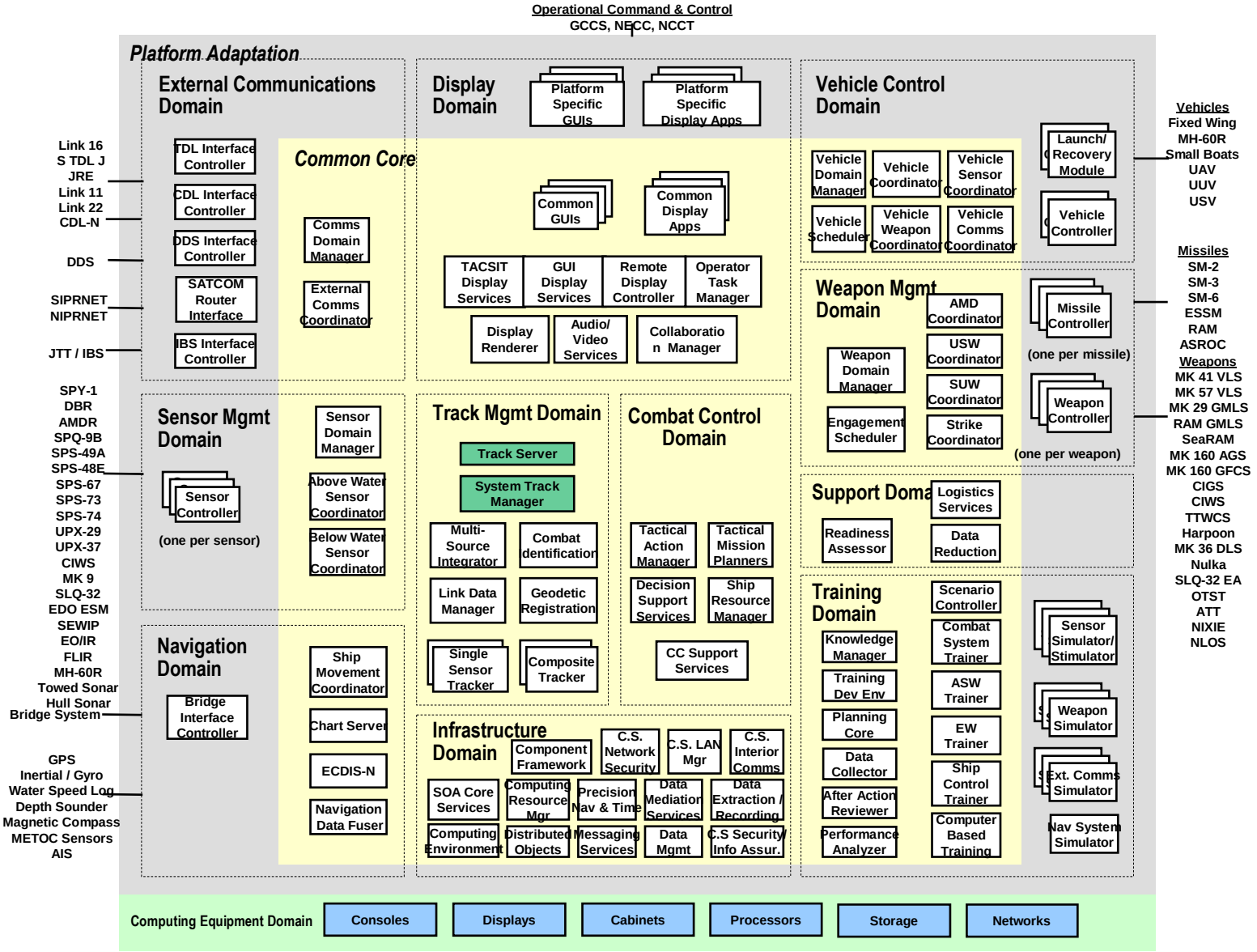
Major Warfighting Capabilities Delivered Through Advanced Capability Builds (ACBs)

- **ACB 08**
  - Decoupled software from hardware with COTS
- **ACB 12**
  - Network-based COTS computing environment with significant computing performance improvements (AMOD)
  - Common Processor System (CPS) / Common Display System (CDS)
  - Common Track Manager / Track Server components in SSDS (CVN 78) and AMOD ships
  - Initial MH-60R capability (CVN)
  - Naval Integrated Fire Control – Counter Air (NIFC-CA) (AMOD)
  - Ballistic Missile Defense (BMD) Capability 5.0 (AMOD)
  - SM-6 (AMOD)
- **ACB 14**
  - MH-60R Control Common Components will be introduced into SSDS and Aegis Combat Systems Across ACB 14 & 16 as development funding permits
  - Full ACB 14 definition under development in conjunction with POM 12

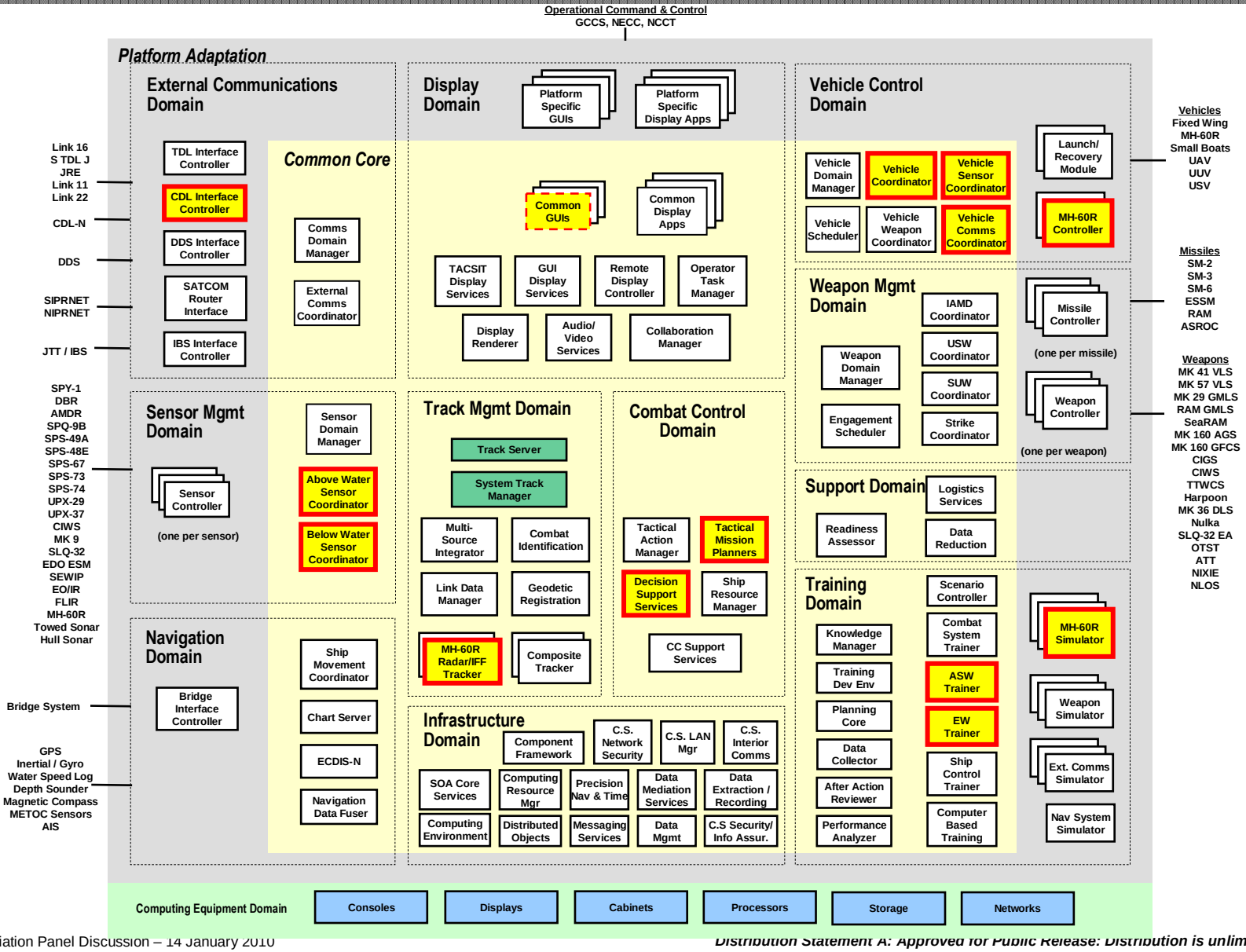
Aegis Weapon System Hardware Architecture Roadmap

	Pre-Aegis	B/L 1/2/3/4/5 DDG 51-78 CG 47-73	B/L 6 Ph I/III DDG 79-90 CG 66 & 69	B/L 7 Ph I DDG 91-112	ACB 08/TI 08 Advanced Capability Build (ACB) Technology Insertion (TI)	ACB 12/TI 12	ACB 16/TI 16
Year	1960	1980	1994	2002	2009	2012	2016
Weapon System							
	MIL Spec Design	MIL Spec Design	Mixed COTS and MILSpec Design	Mission Critical Enclosure (MCE) All COTS computers	(MCE) A Scaleable Pool of Interchangeable Processors	Common Processing System (CPS) & MCE A Scaleable Pool of Interchangeable Processors	Common Processing System (CPS) & MCE A Scaleable Pool of Interchangeable Processors
Processors	UYK-7	UYK-7 UYK-20 UYK-43 UYK-44	UYK-43/44+ Adjunct COTS	COTS SMP's	COTS Blades	COTS Blades	COTS TBD
Normalized Equivalent Capability	2 UYK-43	4 UYK-43	120 UYK-43	270 UYK-43	875 UYK-43	~2500 UYK-43	TBD
Displays	UYH-4	UYH-4	UYQ-21 (TGC)	UYQ-21/UYQ-70	Thin Client Displays	Thin Client Displays	Common Display Systems (CDS)
Connectivity	All NTDS	Point-to-Point	Point-to-Point	Point-to-Point		All Network Pub Sub	All Network Pub Sub

Surface Combat System Top Level Architecture
(ACB 12) Common Track Manager / Track Server Components



Surface Combat System Top Level Architecture
Phasing Common MH-60R Vehicle Control Components in ACB 14 Through ACB 16



Combat Systems Engineering Strategy Summary

- Transitioning to network-based COTS computing environment which enables significant computing and warfighting improvements in current and future force
- Establishing a Combat System based on a common objective architecture with products applicable to multiple ship classes
  - Government owned architecture and authenticated interfaces
- Conducting Combat System development through disciplined systems engineering principles and processes
- Future Surface Combat Systems will be created from existing and new development components